Attachment 1

Item 5b

CalPERS
Asset Allocation Preview

Investment Committee

March 16, 2009

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Asset Allocation

CalPERS

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Timeline

- March 2009
  - Review process and key assumptions and seek Committee input.
- May 2009
  - Recommend asset mix options for selection by Committee.

Objectives and Asset Allocation Framework

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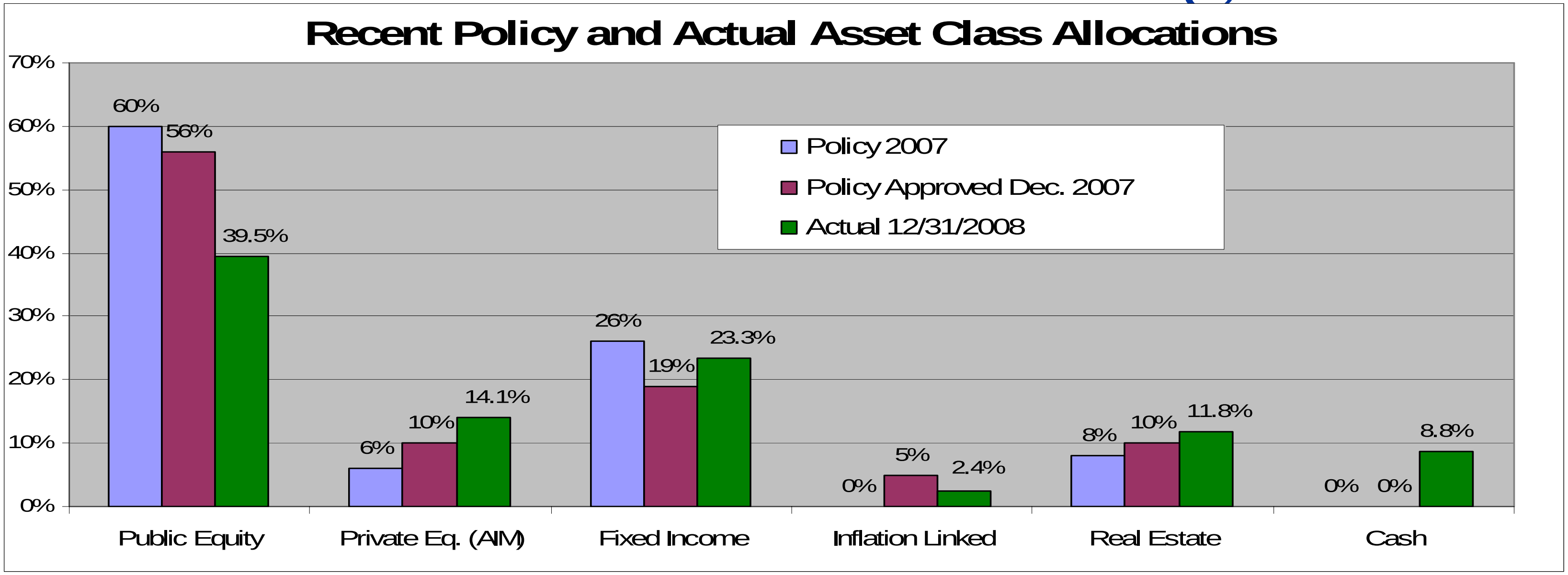
Objectives of 2009 Review

- Liquidity needs indicate:
  - Policy allocation to cash.
  - Preference for yield-oriented returns.
- Private Equity (AIM) actual weight will substantially exceed its policy weight for several years, suggesting need for:
  - Higher target weight to AIM.
  - Combining policy allocation to total equities (public and private equities) may address this issue.
- Consider opportunistic allocation to take advantage of special situations.
- The decision factors approach is not being used because:
  - Of a limited scope review process.
  - Achieving full funding with stable contribution rates is not feasible within a 15 year time frame.
- Objective is to select a policy mix with an expected return/risk similar to current policy while addressing current needs.

2007 Decision Factors

Decision Factor Number	Decision Factor	Decision Factor Measure	Objective
Funding Level Related Decision Factors			
1	Improve Funding	The funded ratio is to improve by 10% at the end of 15 years.	Maximize Probability
2	Avoid Low Funding	The funded ratio is not to decrease below 80% from now to the end of 15 years.	Maximize Probability
Cost Related Decision Factors			
3	Minimize Employer Contributions	The average employer contribution is to be as low as possible from now to the end of 15 years.	Minimize Employer Contribution Rate
4	Stabilize Employer Contributions	The employer contribution should not increase above 25% of payroll from now to the end of 15 years.	Minimize Probability

2007 Asset Allocation Changes



December 2007	Investment Committee approved new asset class policy targets: ▪ New for Inflation Linked. ▪ Increased for Private Equity and Real Estate. ▪ Reduced for Fixed Income.
December 2008	Investment Committee: ▪ Approved wider asset class policy ranges to accommodate high market volatility and illiquidity in the current crisis. ▪ Directed a review of policy targets and ranges by June 2009.

Asset Allocation Framework

- Understanding of theory and assumptions is important for effective use.
- Financial theory and asset allocation models make simplifying assumptions: efficient markets; rational behavior; risk aversion.
- Returns are assumed to be normally distributed (form a bell-shaped distribution around the mean).
  - Realized distributions are non-normal (skewed).
  - Mean-variance optimization does not work well if returns are substantially non-normal.
  - Scenario analysis and simulations may be needed.
- Liquidity preference is not factored into the model.
  - All assets are presumed to be equally liquid and tradeable.

Asset Allocation Framework (cont.)

- Preference for type of return (yield vs. capital gain) is not factored into the model.
- Equilibrium conditions and a risk premium model are assumed.
  - In practice, starting conditions matter; risk premia may not be achieved in every period.
  - Asset prices may be driven up or down by investor expectations and confidence (or lack thereof) causing distortions from fundamental value. Feedback loops may exacerbate price movements.
- Optimization model is highly sensitive to changes in the forecast mean (average) return.
  - The mean return displays the largest forecast errors.
- A focus on asset allocation masks risk diversification.
  - Equity risk dominates total risk in a typical portfolio.

Realized vs. Forecast 2000 - 2008

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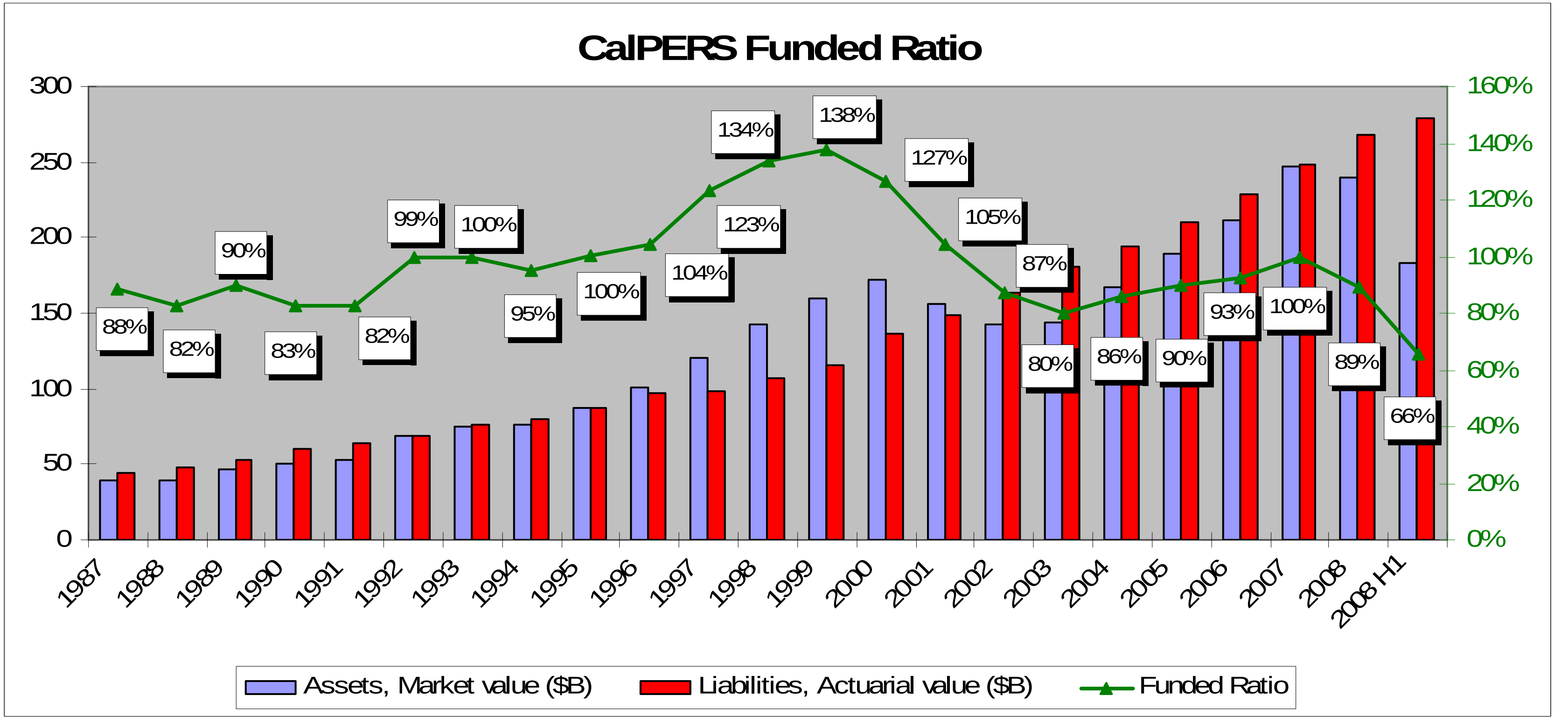
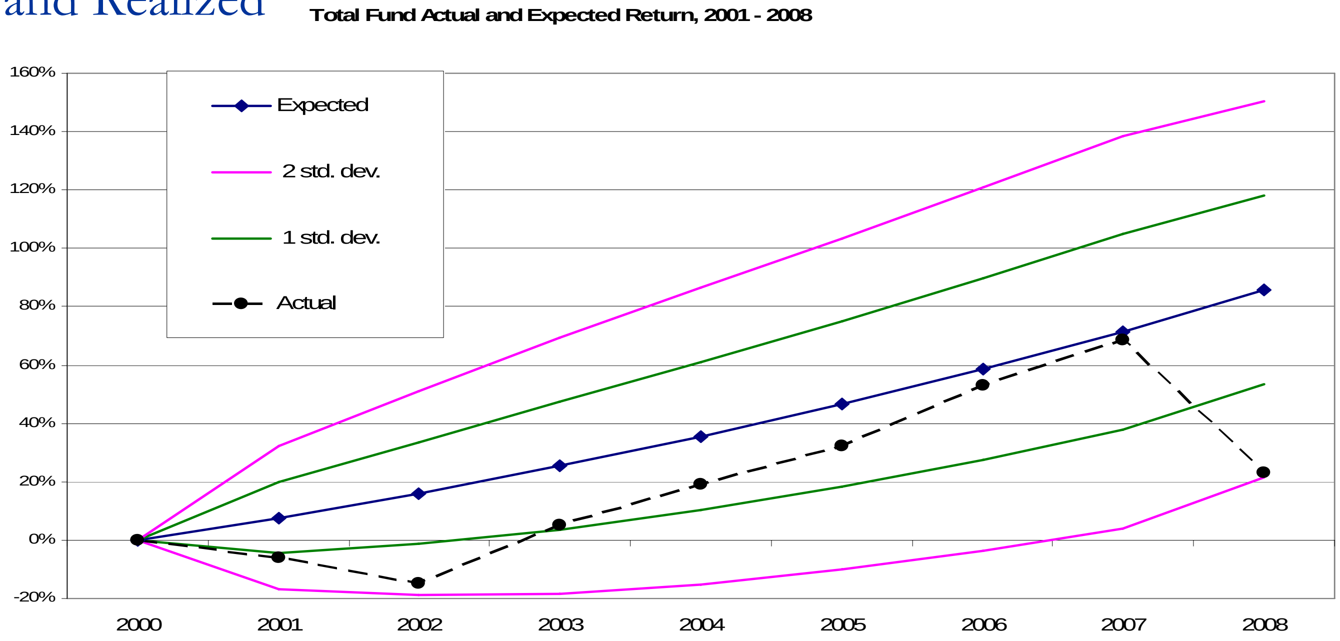


- Funded ratio = market value of assets / actuarial value of liabilities.
- Funded ratio = 66% as of 12/31/2008.
- All years are fiscal years ending June 30.
- 2009 H1 is for December 31, 2008.
  - Liabilities at this date are assumed to be 4% above mid-year 2008 values, consistent with recent 8% annual growth.

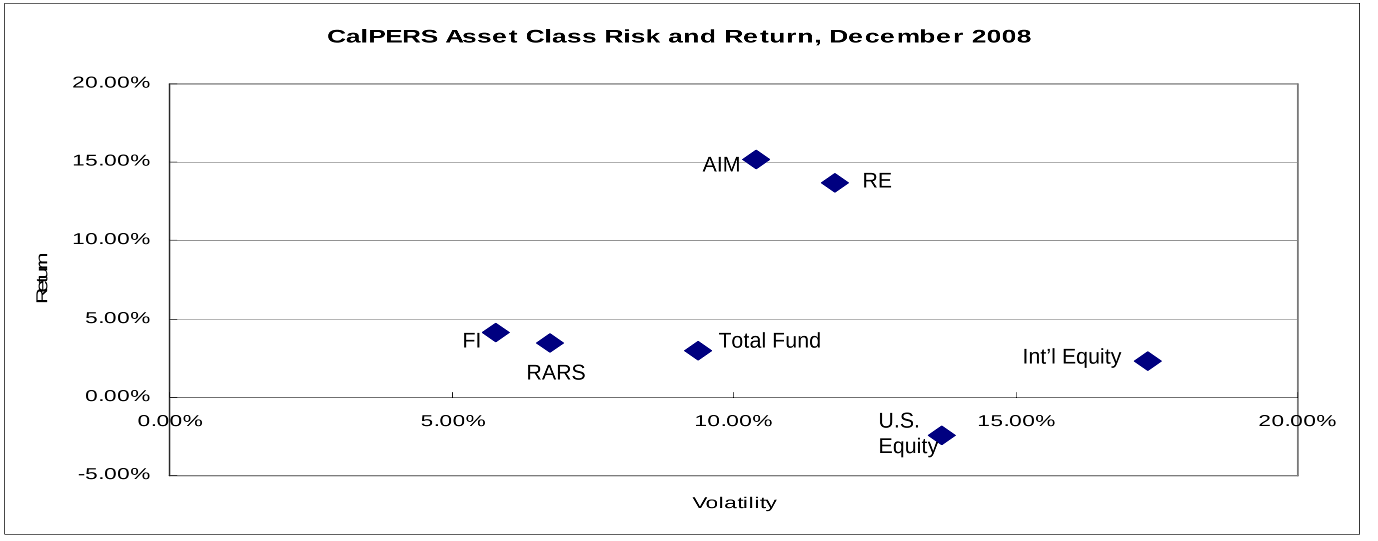
Total Fund Cumulative Returns since 2000

Forecast and Realized



- The expected total fund annual return (blue line) has been 8%.
- Green lines show range of +/- one standard deviation (2/3 of expected returns).
- Pink lines show range of +/- two standard deviations (95% of expected returns).
- Cumulative actual return (black):
  - Reached nearly negative two standard deviations in 2002 and 2008 due to steep declines in equity markets.
  - The current decade has seen worst equity performance since the 1930’s.

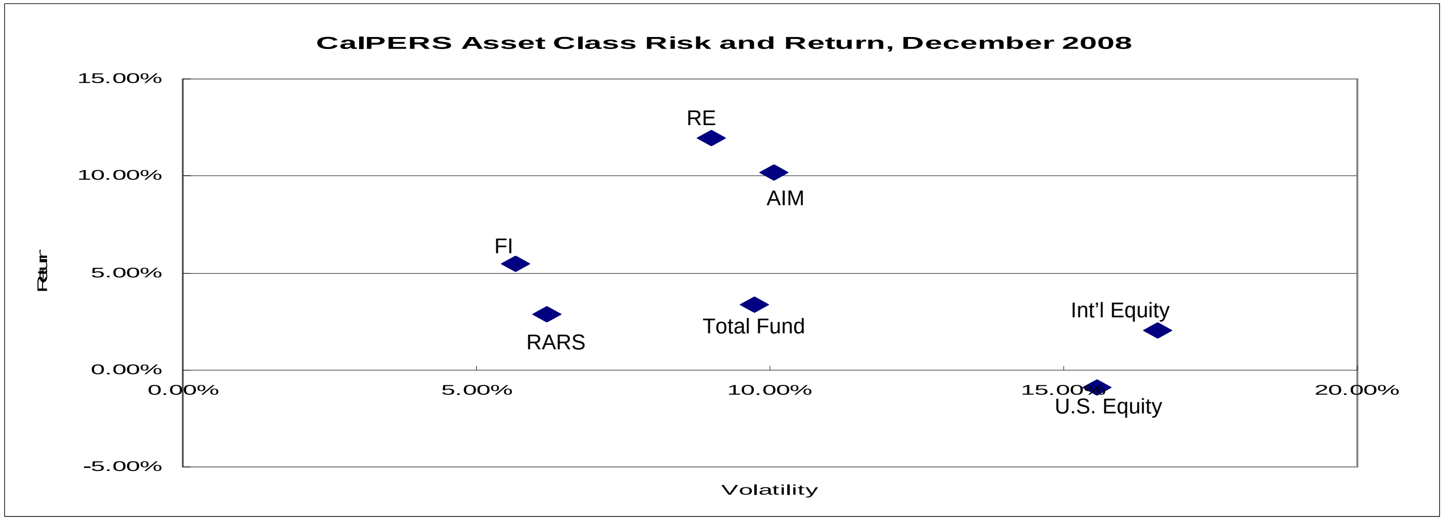
Forecast and Realized Returns – 5 Year



CalPERS Asset Class	5 year Standard Deviation	5 year Nominal Return	5 year Real Return*	2002 Assumptions Standard Deviation	2002 Assumptions Real Return**
U.S. Equity	13.68%	-2.42%	-4.80%	17%	5.64%
International Equity	17.34%	2.34%	-0.16%	20%	5.21%
AIM	10.39%	15.15%	12.35%	30%	5.34%
Fixed Income	5.78%	4.12%	1.58%	8%	2.65%
Real Estate	11.81%	13.67%	10.89%	14%	2.55%
Total Fund	9.38%	2.99%	0.48%		

* Real Returns are calculated using 2.5% inflation assumption.
** Return Assumptions are converted from Arithmetic Returns to Geometric Returns.

Forecast and Realized Returns – 10 Year

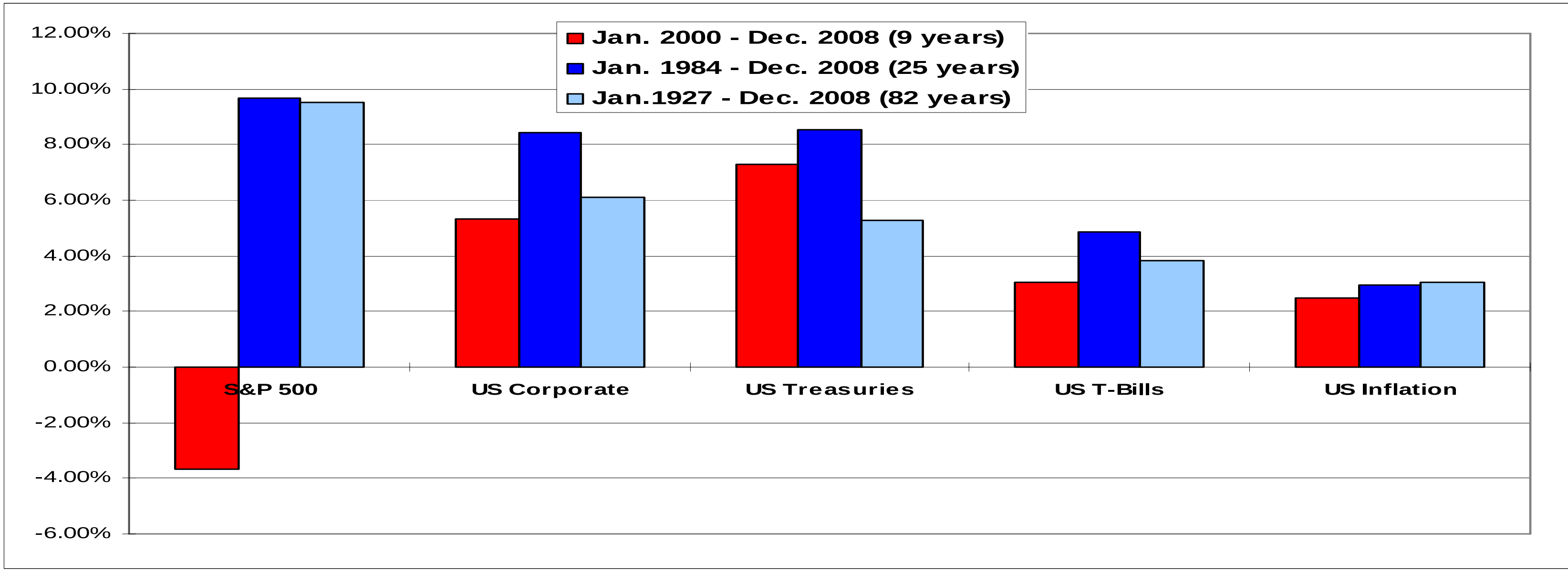


CalPERS	10 year			1998 Assumptions	
Asset Class	Standard Deviation	Nominal Return*	Real Return*	Standard Deviation	Real Return**
U.S. Equity	15.56%	-0.91%	-3.32%	17%	6.15%
International Equity	16.61%	2.04%	-0.44%	20%	6.02%
AIM	10.08%	10.16%	7.47%	35%	6.39%
Fixed Income	5.67%	5.45%	2.88%	9%	3.15%
Real Estate	8.99%	11.94%	9.21%	14%	5.07%
Total Fund	9.73%	3.34%	0.82%		

* Real Returns are calculated using 2.5% inflation assumption.
** Return Assumptions are converted from Arithmetic Returns to Geometric Returns.

Long Term Returns

Over the long term, risk premium model has worked – not in the current decade.



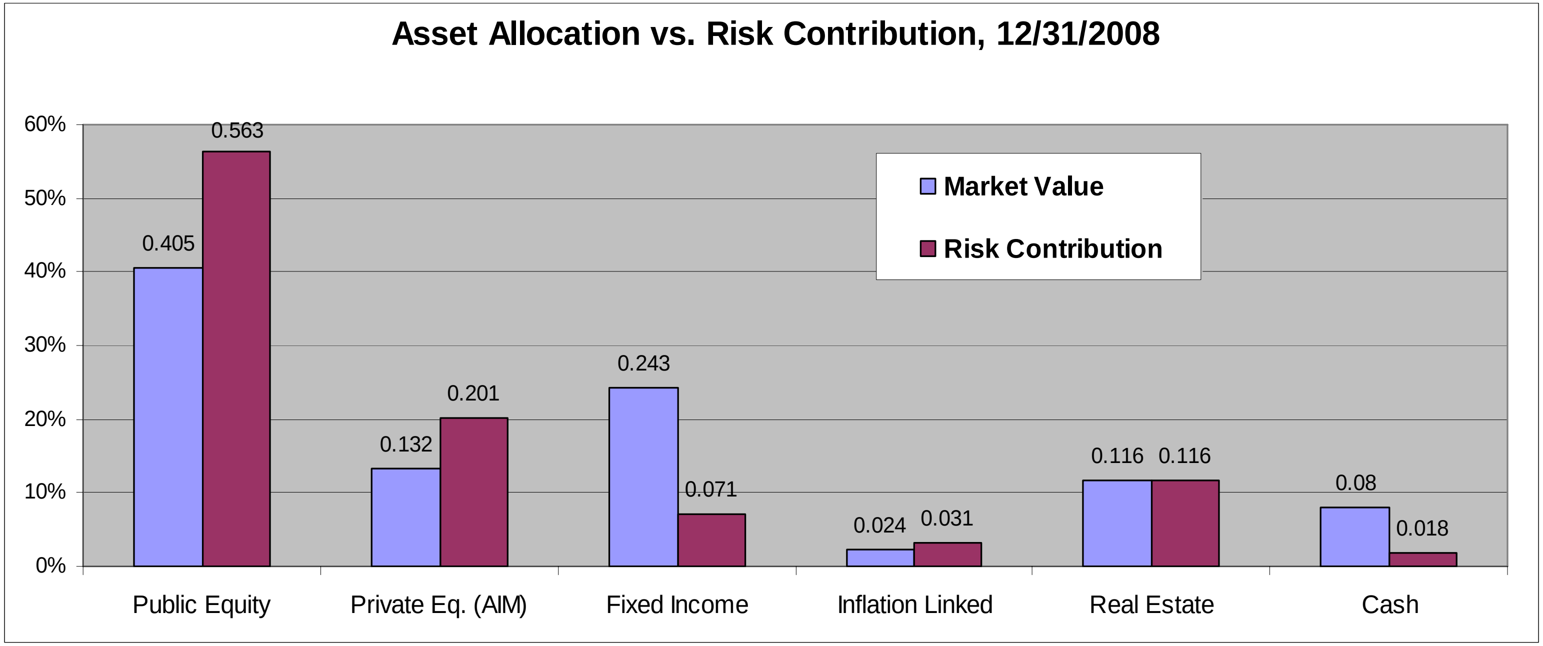
Geometric Annual Returns	S&P 500	US Corporate	US Treasuries	US T-Bills	US Inflation
Jan. 2000 - Dec. 2008 (9 years)	-3.66%	5.31%	7.29%	3.05%	2.50%
Jan. 1984 - Dec. 2008 (25 years)	9.68%	8.43%	8.51%	4.88%	2.96%
Jan.1927 - Dec. 2008 (82 years)	9.53%	6.12%	5.30%	3.84%	3.06%

Initial Conditions affect subsequent returns

	12/31/1979	12/31/1989	12/31/1999	12/31/2008
P/E (S&P 500)	7.43	14.71	33.29	19.59
Dividend Yield (S&P 500)	5.55%	3.31%	1.15%	2.96%
10-year Treasury Yield	10.39%	7.84%	6.28%	2.42%
Credit Spread	1.67%	1.98%	1.91%	6.01%
CPI **(subsequent period)**	5.1%	2.9%	2.5% (9 yrs.)	
Real GDP growth (subsequent)	3.0%	3.1%	2.3% (9 yrs.)	
S&P 500 returns (subsequent)	17.4%	18.1%	-3.7% (9 yrs.)	

- Decade of 1980's and 1990's produced higher than average equity returns as P/E multiples expanded from low levels, yields contracted from high levels; interest rates and inflation declined.
- Decade of 2000's has produced negative equity returns as P/E has contracted and is reverting toward the mean of 15.

Asset Allocation vs. Risk Allocation



- Equities (public and private) account for 76% of the Total Fund risk compared to dollar allocation of 53.7%.
- Fixed Income accounts for 7.1% of the Total Fund risk compared to dollar allocation of 24.3%.
- Risk diversification is different from asset (dollar) allocation.

Selection of Assets

Selection of Assets

- Should the AA policy have allocations to cash?

- Should Absolute Return Strategies (RMARS) continue to be allocated within Global Equity?

- Opportunistic Allocation?

Policy Allocation to Cash

- Advantages – recognizes the need for liquidity to fund:
  - Capital calls for non-publicly traded assets.
  - Benefit payments and operational needs.
  - Reserves for recourse debt commitments and contingencies.
- Disadvantages
  - Lower expected Total Fund returns.
    - Each additional 1% in cash reduces the Total Fund expected return by 5 basis points (0.05%).

CalPERS Cash Flows

Fiscal years ending June, $B

Fiscal year ending	Total Contributions	Benefit Payments	Investment Income	"Total" Cash Flow	Average Yield
2002	2.85	-6.43	5.50	1.92	3.7%
2003	3.70	-6.99	4.86	1.57	3.4%
2004	6.38	-7.64	5.79	4.53	3.7%
2005	8.80	-8.43	5.88	6.25	3.3%
2006	9.01	-9.24	5.42	5.19	2.7%
2007	9.52	-10.07	5.07	4.52	2.2%
2008	10.06	-10.84	1.89	1.11	0.8%

source: Comprehensive Annual Financial Reports (2008 is preliminary).

- Return from income (yield) has declined over the years.
  - Increased allocation to growth-oriented assets at the expense of income-generating assets.
  - Sharp decline in 2008 is due to negative income in RE and cost of lending, which are non-recurring.
- Benefit payments:
  - Have grown at a 9% annual rate since 2002.
  - Exceeded contributions each year except 2005.
- Should there be a preference for higher yield returns in the Asset Allocation?

Absolute Return Strategies (RMARS)

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Absolute Return Strategies (RMARS)

- The RMARS program is currently funded from the Global Equity Allocation.
- RMARS has grown from 0% in 2002 to 3.5% of the Total Fund.
- RMARS hedge fund strategies bet on asset price (or yield) spreads across multiple assets (equities, fixed income, convertibles, currencies, commodities, etc).
  - Hence there is debate as to whether they constitute a separate asset class. They certainly form a different risk class than equities and are much less liquid.
- Compensation structure (2%/20% over 0%) is an incentive to leverage.
- What should be the allocation to hedge funds and what is the most efficient way to allocate? Optimizing an implementation portfolio inclusive of RMARS is a possible solution.

Absolute Return Strategies (RMARS)

Risk and Return of RMARS is different from Global Equity

(since inception April 2002 to December 31, 2008)

	RMARS	US Equity	Intl. Equity	Global Fixed Income
Return	4.29%	-1.38%	3.29%	6.27%
Std. Dev.	6.20%	14.90%	17.48%	6.12%
Correlation of RMARS	1.0	0.80	0.85	0.20
Beta	-	0.33	0.30	0.20

Asset Yields and Performance

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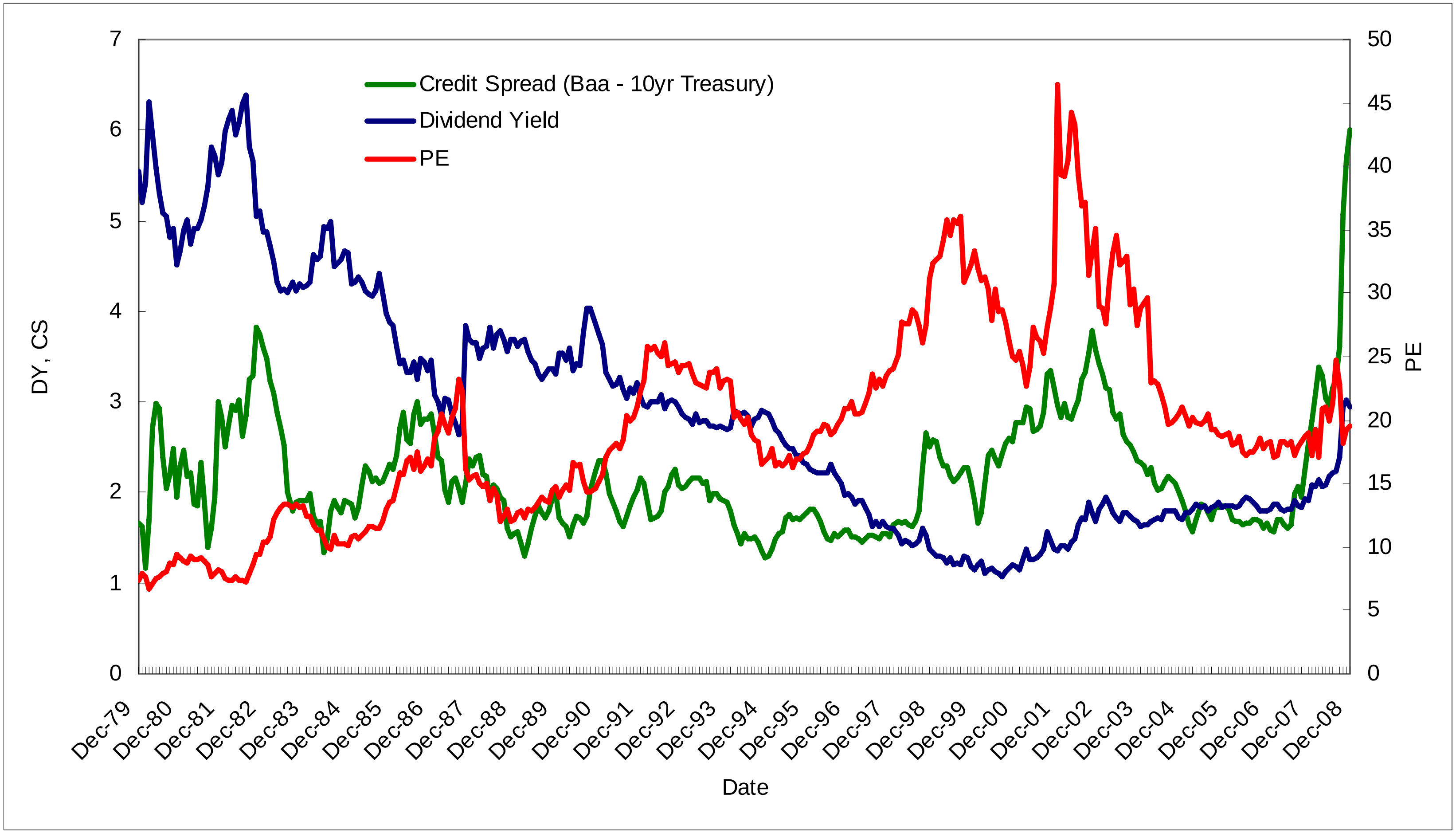
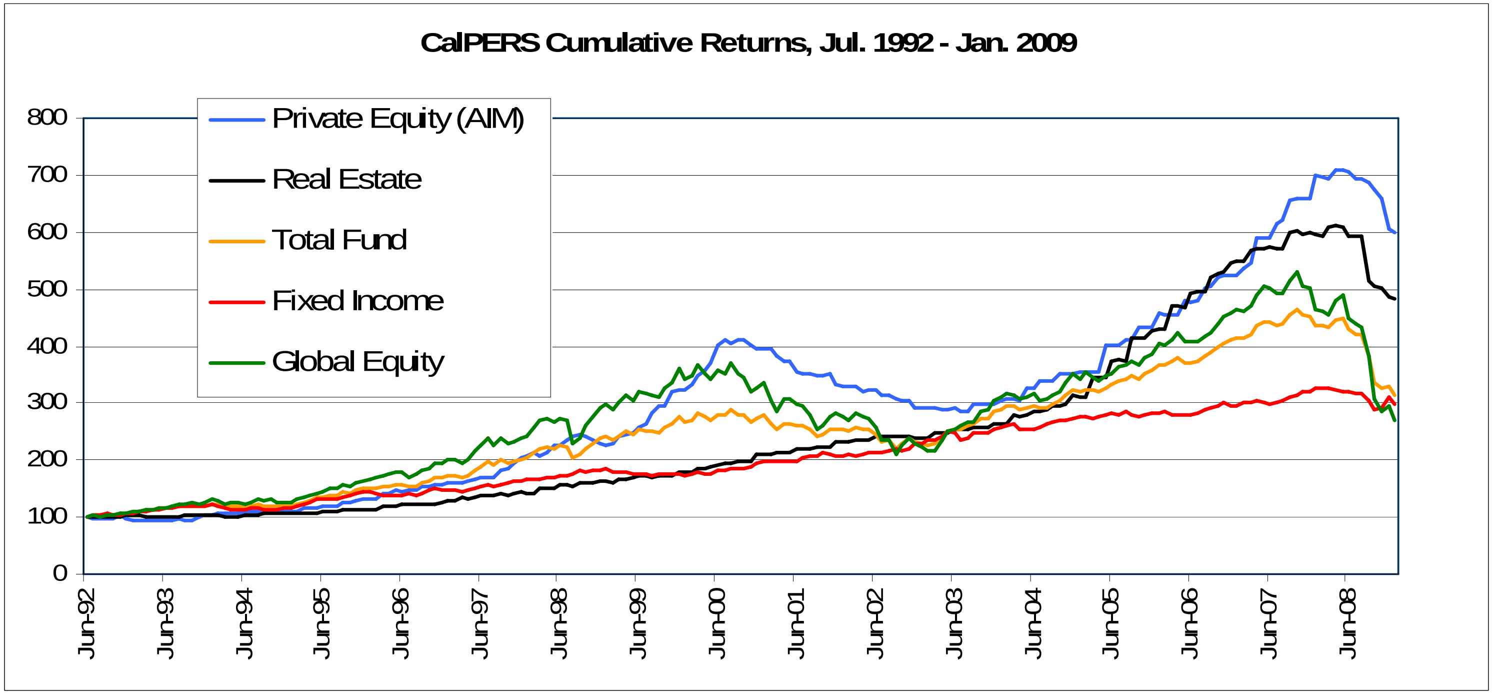
Equity and Bond Yields

Credit spreads present opportunity – default risks are concern.



Alternatives have outperformed



- Private equity and real estate have outperformed fixed income and publicly traded equities since 1992.
  - In part due to lags in the valuation of nonpublicly traded assets.
- Global equity has not outperformed fixed income over this period.
  - A result that occurs only occasionally and is not expected to persist.

Near Term Outlook/Themes

Near Term Outlook/Themes

- De-leveraging
  - Forced selling in highly leveraged investments.
  - Scarcity of debt capital for leveraged investments (Hedge Funds, Private Equity, Real Estate, Infrastructure).
  - Re-pricing of deals (downward).
  - Lack of exit opportunities.
- Liquidity
  - Some improvement in liquidity from Q4 2008 conditions.
  - Not yet back to normal conditions.
  - Requires higher illiquidity premium.

Near Term Outlook/Themes (cont.)

- Deflation/Inflation
  - Rapid economic contraction.
  - Capacity utilization rates low.
  - Unemployment rising.
  - Near term deflationary prospect.
  - CPI*

2008	2009	2010	2011
3.8%	-0.8%	1.8%	2.4%

- GDP Growth
  - Stimulus and Fed actions to cause GDP growth in 2010.
  - GDP*

2008	2009	2010	2011
1.1%	-1.9%	2.1%	2.9%

*Consensus estimates for 2009/2010/2011

Assumptions and Sample Portfolios

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2009 Long-Term Forecasts, Expected Return and Risk

Long-Term Forecast Annual Return

Arithmetic Real Return	Wilshire	PCA	Fin. Engines	Callan	Mercer	Average	CalPERS 2007	Consensus 2009
Public Equity	8.3%	6.9%	7.2%	7.7%	7.1%	7.4%	7.0%	7.4%
Priv. Eq. (AIM)	12.9%	9.3%	9.3%	14.1%	10.1%	11.1%	10.0%	10.4%
Fixed Income	3.9%	2.2%	3.5%	2.5%	2.0%	2.8%	3.0%	3.0%
Inflation Linked	5.3%	5.1%	3.1%			4.5%	4.0%	4.0%
Real Estate	7.6%	5.8%	6.1%	5.6%	5.3%	6.1%	6.0%	5.7%
Cash	0.5%	1.0%	2.0%	0.3%	0.7%	0.9%	1.3%	1.3%
CPI	1.5%	3.0%	3.5%	2.8%	2.8%	2.7%	2.9%	2.5%

Long-Term Forecast Standard Deviation

Standard Deviation	Wilshire	PCA	Fin. Engines	Callan	Mercer	Average	CalPERS 2007	Consensus 2009
Public Equity	15.9%	17.8%	15.8%	19.3%	18.6%	17.5%	16.5%	17.5%
Priv. Eq. (AIM)	26.0%	24.8%	41.9%	37.0%	28.4%	31.6%	25.0%	30.5%
Fixed Income	9.0%	5.1%	5.4%	7.3%	9.8%	7.3%	6.5%	7.0%
Inflation Linked	9.6%	10.3%	11.7%			10.5%	14.0%	10.5%
Real Estate	13.2%	16.8%	18.8%	16.1%	13.7%	15.7%	17.0%	17.0%
Cash	1.3%	1.5%	1.0%	0.8%	2.3%	1.4%	1.5%	1.4%

Assumptions, Constraints and Correlation for Sample Portfolios

Consensus Assumptions

	Arithmetic Real Ret.	Std. Dev.	Current Policy Initial Portfolio	**Constraints** Min	Max
Global Equities	7.40	17.50	56		
Alt. Inv.	10.40	30.50	10		18
Fixed Income	3.00	7.00	22	15	
Inflation Linked	4.00	10.50	2		5
Real Estate	5.70	17.00	10		15
Cash	1.30	1.40	0	equal to 2	
Inflation	2.50				

Correlation	Global Equities	Alt. Inv.	Fixed Income	Inflation Linked	Real Estate	Cash
Global Equities	1.00	0.67	0.20	0.21	0.43	0.12
Alt. Inv.	0.67	1.00	0.04	0.13	0.38	0.03
Fixed Income	0.20	0.04	1.00	0.18	0.11	0.29
Inflation Linked	0.21	0.13	0.18	1.00	0.34	0.07
Real Estate	0.43	0.38	0.11	0.34	1.00	0.17
Cash	0.12	0.03	0.29	0.07	0.17	1.00

Sample Portfolios - 1

Sample Portfolios based on consensus assumptions

Portfolio	Expected Risk	Expected Return	Public Equity	Priv. Eq. (AIM)	Fixed Income	Inflation Linked	Real Estate	Cash	Liquidity
1	10.50	5.65	29.30	12.86	36.41	5.00	14.43	2.00	70.21
2	10.75	5.73	30.31	13.30	34.74	5.00	14.65	2.00	69.55
3	11.00	5.82	31.38	13.76	32.97	5.00	14.89	2.00	68.85
4	11.25	5.90	32.40	14.20	31.40	5.00	15.00	2.00	68.30
5	11.50	5.98	33.47	14.64	29.89	5.00	15.00	2.00	67.86
6	11.75	6.06	34.51	15.09	28.40	5.00	15.00	2.00	67.41
7	12.00	6.14	35.63	15.56	26.81	5.00	15.00	2.00	66.94
8	12.25	6.22	36.66	16.00	25.34	5.00	15.00	2.00	66.50
9	12.50	6.29	37.68	16.43	23.89	5.00	15.00	2.00	66.07
10	12.75	6.38	38.77	16.89	22.34	5.00	15.00	2.00	65.61
Current Policy	13.34	6.52	56.00	10.00	19.00	5.00	10.00	0.00	77.50

Sample Portfolios - 2

Sample Portfolios constraining the sum of RE, AIM and ILAC to be equal or less than 30% of the total fund

Portfolio	Expected Risk	Expected Return	Public Equity	Priv. Eq. (AIM)	Fixed Income	Inflation Linked	Real Estate	Cash	Liquidity
1	10.50	5.65	31.44	12.27	36.56	5.00	12.73	2.00	72.50
2	10.75	5.73	33.02	12.52	34.98	5.00	12.48	2.00	72.50
3	11.00	5.81	34.58	12.77	33.42	5.00	12.22	2.00	72.50
4	11.25	5.89	36.11	13.02	31.89	5.00	11.98	2.00	72.50
5	11.50	5.98	37.74	13.28	30.26	5.00	11.72	2.00	72.50
6	11.75	6.05	39.24	13.53	28.76	5.00	11.47	2.00	72.50
7	12.00	6.13	40.73	13.77	27.27	5.00	11.23	2.00	72.50
8	12.25	6.21	42.20	14.00	25.80	5.00	11.00	2.00	72.50
9	12.50	6.29	43.77	14.26	24.23	5.00	10.74	2.00	72.50
10	12.75	6.36	45.21	14.49	22.79	5.00	10.51	2.00	72.50
Current Policy	13.34	6.52	56.00	10.00	19.00	5.00	10.00	0.00	77.50

Sample Portfolios - Wilshire

Sample Portfolios based on Wilshire assumptions and CalPERS constraints keeping the sum of AIM, RE and ILAC less than or equal to 30%

Portfolio	Expected Risk	Expected Return	Public Equity	Priv. Eq. (AIM)	Fixed Income	Inflation Linked	Real Estate	Cash
1	10.50	7.07	39.04	10.00	28.96	5.00	15.00	2.00
2	10.75	7.18	41.52	10.00	26.48	5.00	15.00	2.00
3	11.00	7.28	43.91	10.00	24.09	5.00	15.00	2.00
4	11.25	7.39	45.77	10.27	22.23	4.73	15.00	2.00
5	11.50	7.49	46.70	11.06	21.30	3.94	15.00	2.00
6	11.75	7.59	47.63	11.84	20.37	3.16	15.00	2.00
7	12.00	7.69	48.54	12.61	19.46	2.39	15.00	2.00
8	12.25	7.79	49.45	13.37	18.55	1.63	15.00	2.00
9	12.50	7.89	50.39	14.17	17.61	0.83	15.00	2.00
10	12.75	7.99	51.28	14.92	16.72	0.08	15.00	2.00

Sample Portfolios - PCA

Sample Portfolios based on PCA assumptions and CalPERS constraints keeping the sum of AIM, RE and ILAC less than or equal to 30%.

Portfolio	Expected Risk	Expected Return	Public Equity	Priv. Eq. (AIM)	Fixed Income	Inflation Linked	Real Estate	Cash
1	10.50	5.50	36.73	15.82	31.27	5.00	9.18	2.00
2	10.75	5.57	38.15	16.11	29.85	5.00	8.89	2.00
3	11.00	5.64	39.41	16.37	28.59	5.00	8.63	2.00
4	11.25	5.71	40.81	16.65	27.19	5.00	8.35	2.00
5	11.50	5.78	42.07	16.91	25.93	5.00	8.09	2.00
6	11.75	5.86	43.45	17.19	24.55	5.00	7.81	2.00
7	12.00	5.92	44.70	17.44	23.30	5.00	7.56	2.00
8	12.25	5.99	45.93	17.69	22.07	5.00	7.31	2.00
9	12.50	6.06	47.31	17.97	20.69	5.00	7.03	2.00
10	12.75	6.13	48.70	18.00	19.30	5.00	7.00	2.00